

REMARKS/ARGUMENTS

This is a preliminary amendment in a RCE Application. The Office Action mailed 3/14/2003 has been carefully reviewed. Reconsideration of this application, as amended and in view of the following remarks, is respectfully requested.

35 USC §112 Rejection

Claims 1, 3-6 and 9 were rejected under 35 USC §112 as allegedly failing to particularly point out and distinctly claim the invention. The rejections were directed to elements of the previous claims relating to the circulation system and the lasing chambers.

Claims 1, 3, 4, 5, and 9 have been amended. Claims 2, 6, 7, and 8 have been cancelled. The claims (amended claims 1, 3, 4, 5, and 9) now present for examination accurately define the invention and are believed to overcome the Examiner's rejection under 35 USC §112.

35 USC §103(a) Rejection

Claims 1, 3-6 and 9 were rejected under 35 U.S.C. §103(a) over Kocher et al in view of Scheps and Chun.

Claims 1, 3, 4, 5, and 9 have been amended. Claims 2, 6, 7, and 8 have been cancelled. The claims (amended claims 1, 3, 4, 5, and 9) now present for examination are believed to overcome the Examiner's rejection under 35 USC §103(a).

Amended claims 1, 3, 4, 5, and 9 now present in the application contain the following elements:

Claim 1 - a closed loop circulation system for circulating said trivalent titanium ions dissolved in a liquid host, said closed loop circulation system comprising a first portion for circulating said trivalent titanium ions dissolved in

a liquid host into and out of said lasing chamber in a first direction and a second portion for circulating said trivalent titanium ions dissolved in a liquid host into and out of said lasing chamber in a second direction that is opposite to said first direction.

Claim 4 - wherein thermally induced optical phase errors are produced by said a closed loop circulation system for circulating said trivalent titanium ions dissolved in a liquid host and wherein said first portion for circulating said trivalent titanium ions dissolved in a liquid host into and out of said lasing chamber in a first direction and said second portion for circulating said trivalent titanium ions dissolved in a liquid host into and out said lasing chamber in a second direction that is opposite to said first direction provides a system for correcting said thermally induced optical phase errors.

Claim 5 - wherein said first portion for circulating said trivalent titanium ions dissolved in a liquid host includes a first flow channel and said second portion for circulating said trivalent titanium ions dissolved in a liquid host includes a second flow channel, said first flow channel and said second flow channel being of substantially equal length.

Claim 9 - a closed loop circulation system for circulating said trivalent titanium ions dissolved in a liquid host, said closed loop circulation system comprising a first portion for circulating said lasing liquid containing trivalent titanium ions dissolved in a liquid host into and out of said optical cavity in a first direction, and a second portion for circulating said lasing liquid containing trivalent titanium ions dissolved in a liquid host into and out of said optical cavity in a second direction that is opposite to said first direction, said closed loop circulation system including a pump and a heat exchanger.

The elements and steps identified above are supported by the original specification and drawings. The original specification contains the following

statements, "A liquid lasing medium is circulated through a closed loop," page 9, line 6; "The pump 24 circulates the lasing liquid through a pair of heat exchangers/flow conditioners 25 and 25', a static pressurizer 26, and the optical cavities 22 and 22'," page 9, lines 14 -16; and The linear component, or optical wedge, that builds up in the liquid as it flows past the pump windows is predictable and steady. By arranging two cells in series in the laser cavity having opposite flow directions allows the wedge to be canceled, page 9, lines 19 - 22. This is illustrated in FIG. 1 of the drawings showing the closed loop 21 circulating the lasing liquid into and out of the lasing chambers 22 and 22'. The flow into and out of lasing chambers 22 is toward the top of the page and the flow into and out of lasing chambers 22' is toward the bottom of the page.

The Kocher et al, Scheps, and Chun references do not show the elements described above. There is no teaching in the Kocher et al, Scheps, or Chun references to establish obviousness.

It would not be obvious within the meaning of 35 USC §103(a) to combine the Kocher et al, Scheps, and Chun references as a basis for rejecting amended claims 1, 3, 4, 5, and 9 now present for examination. The Kocher et al, Scheps, and Chun references show very different laser systems and it would not be obvious to combine selected portions from such very different laser systems.

The Kocher et al reference shows a circulating liquid laser. The Kocher et al reference states, "A circulating liquid laser is one in which the liquid active material continuously flows through a closed system."

The Scheps reference shows a solid state crystalline laser gain element. The Scheps reference states, "The present invention is directed to providing a tunable laser and more specifically a tunable laser that can be tuned without requiring a discrete, separate tuning element."

The Chun reference shows a pulsed electrical discharge gas laser. The Chun reference states, "This invention uses "acoustic obstacles" to circulate the gas in the pulse discharge gas laser."

The Kocher et al, Scheps, and Chun references do not show the claimed combination. There is no teaching or suggestion in the references to form a proper combination. It would not be obvious to combine selected portions from such very different laser systems.

SUMMARY

The undersigned respectfully submits that in view of the foregoing amendments and the remarks, the rejections of the claims raised in the Office Action dated 3/14/2003 have been fully addressed and overcome. The present application is believed to be in condition for allowance. It is respectfully requested that this application be reconsidered, that the claims be allowed, and that this case be passed to issue. If it is believed that a telephone conversation would expedite the prosecution of the present application, or clarify matters with regard to its allowance, the Examiner is invited to call the undersigned attorney at (925) 424-6897.

Respectfully submitted,



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